

Remarks

Reconsideration and allowance of the above-identified matter for at least the reasons given below is respectfully requested.

The present invention is a radio frequency amplifier module comprising:

a module substrate; a radio frequency power amplifier part which is arranged on the module substrate and amplifies a power of a RF signal; a bias control part which is arranged on the module substrate and controls operation of the RF power amplifier part with a bias voltage; and a bias supply line for supplying the bias voltage from the bias control part to the RF power amplifier part, wherein the bias supply line includes at least one bonding pad having a capacitance component to a ground and a bonding wire formed via the at least one bonding pad (see claim 1).

An example disclosed embodiment thereof is illustrated in Fig. 1+, although not limited thereto, which shows a RF power amplifier module arranged on a module substrate 110, in which 103 and 104 relate to the "RF power amplifier part" and the "bias control part", respectively, and 108, 109 relate to the set forth "bias supply line". In this illustration, for example, a bias control line is provided for each stage of the two-stage amplifier shown and is also shown to include a bonding wire 105 formed via a bonding pad 106 having a capacitive component to a ground and the bonding wire assumes an inductance. In this example the bonding wire which forms the inductance has a shape referred to in the present specification as a "stitch structure inductance" (see the discussion beginning on page 6, line 23, and note, also, page 7, line 23, to page 8, line 10, and Figs. 1-2).

The dependent claims further detail originally disclosed aspects of the present invention, examples of which (although not limited thereto) can be seen with regard to various ones of the illustrated embodiments. An example of

the featured aspects set forth in claims 2 and 3, both of which are dependent on base claim 1, are shown with regard to Figs. 6 and 7 of the drawings, respectively (see also the discussion on page 9, line 21 et seq., and page 10, line 6 et seq. of the present Specification.) With regard to claim 4 (dependent on claim 1), the invention calls for the RF power amplifier part (e.g., 103) and the bias control part (e.g., 104) to be constituted as a semiconductor integrated circuit formed on the same semiconductor substrate and for the bias supply line (e.g., 108, 109) to also be formed on the semiconductor substrate (see page 10, lines 11-15, of the present Specification). Regarding claim 6 (dependent on claim 1), see for example the illustration in Fig. 8. of the drawings, although not limited thereto, and the discussion on page 10, lines 16 et seq, of the present specification.

Regarding independent claim 7, it likewise covers a radio frequency amplifier module such as that according to claims 1+, although, however, the featured "bias supply line" is set forth as comprising a low pass filter which brings attenuation to a RF signal leaking from the RF power amplifier part to the bias control part. An example of this, although not limited thereto, is illustrated with regard to the discussion of the equivalent circuit shown in Fig. 3, et seq., which features a low-pass filter that connects a capacitance between the connection point of the inductance connected in series and a ground. An example physical structure directed thereto can also be seen with regard to Fig. 2, etc., of the drawings which is applicable to various ones of the example disclosed RF power amplifier modules. As is shown in Fig. 3, the equivalent circuit of the stitch structure inductance such as shown in Fig. 2, etc., connects a capacitance between the connection point of the inductance connected in series and a ground. As a result, therefore, the filter can bring about sufficient attenuation to a RF signal that passes through a stitch structure inductance such as shown in Fig. 1 as well as with regard to other ones of

the example disclosed embodiments, although not limited thereto. It is submitted, the invention as now set forth in claims 1-7 is a clear patentable improvement over that previously known including over the art document cited in the outstanding rejection.

According to the Office Action, all of the claims pending, i.e., claims 1-7, stand rejected under 35 USC §102(e) as anticipated by Ichitsubo et al (USP 6,774,718). As will be shown below, the invention according to these claims was neither disclosed nor suggested by Ichitsubo et al. Therefore, this rejection is traversed and reconsideration and withdrawal of the same is respectfully requested.

Ichitsubo et al discloses a power amplifier module 14, built on a substrate 12, for amplifying RF signals (see Fig. 1). Ichitsubo et al's RF power amplifier module features: a RF power amplifier adapted for receiving an input RF signal and a processed power-sensing control signal and for outputting an amplified RF signal; a power-sensing circuit adapted to receive the amplified RF signal and to output a power-sensing control signal; and also features a control logic that receives/processes the power-sensing control signal and outputs the processed power-sensing control signal. (Column 2, lines 16-29, in Ichitsubo et al.) Ichitsubo et al's power amplifier module is integrated with the input and output matching networks and the power sensor that is adapted to receive the amplified RF signal and to output a signal indicating the power output level of the power amplifier module. The power amplifier module, according to Ichitsubo et al, also includes the control logic for controlling the RF power amplifier in accordance with the power output level (see the abstract and column 4, line 16 et seq).

It is alleged that Figs. 1-4 and the related discussion in Ichitsubo et al discloses the invention set forth in the present claims. In this regard, it is alleged that Fig. 4 in Ichitsubo et al discloses the set forth "module substrate" of the present

invention, that Fig. 1 shows the RF power amplifier part, that Bias Circuit 22 shows the "bias control part" and that the set forth "bias supply line ..." is shown in connection with Fig. 1 in Ichitsubo et al.

Fig. 4 in Ichitsubo et al is a diagram of the bottom side of the RF power amplifier module which is shown to include grounding metal pads 101, 103, 106 and 108 as well as center ground 110 (see column 6, line 29 et seq.). Also, from Fig. 4 thereof, Ichitsubo et al discloses a printed circuit board (PCB) 400 to which the power amplifier module is mounted. Ichitsubo et al's PCB 400 is provided with the metal land 410, the four connecting metal lands 401, 403, 406 and 408, which are respectively adjacent to the four corners of the metal land 410, and the via holes 420 for connecting the metal lands 410, 401, 403, 406 and 408 to the ground plane layer of the circuit board. (Column 6, lines 45, to column 7, line 6, in Ichitsubo et al.)

According to base claim 1, a featured aspect thereof is that the bias supply line includes at least one bonding pad having a capacitance component to a ground and a bonding wire formed via the at least one bonding pad. Such, it is submitted, was neither disclosed nor could have been realizable from Ichitsubo et al. This is also the case with regard to the invention set forth in independent claim 7. In the latter, a low-pass filter is called for in connection with the "bias supply line" such that the undesirable leakage of a radio frequency signal into the bias control part is suppressed and, accordingly, stable operation of the bias control part is obtained. Such, it is submitted, was neither disclosed nor suggested by Ichitsubo et al. Nowhere in Ichitsubo et al, applicants submit, is there any discussion or mention of a bias supply line connected, for example, between bias circuit 22 and power amplifiers 24 in Fig. 1 of Ichitsubo et al which necessarily requires one or more bonding pad having a capacitive component to ground and a bonding wire formed via the at least one bonding pad, according to claim 1+ or, for that matter, a low

pass filter in the bias supply line which connects the bias control part to the radio frequency power amplifier part, in connection with independent claim 7. At least for the above reasons, the invention could not have been anticipated, or, for that matter, rendered obvious over the teachings of Ichitsubo et al.

Therefore, reconsideration and withdrawal of the outstanding rejection as well as favorable action on the currently pending claims 1-7 and an early formal notification of allowability of the above-identified application is respectfully requested.

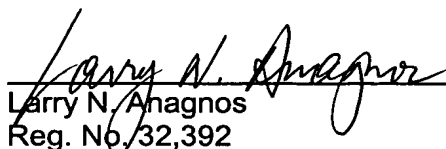
If the Examiner believes that there are any other points which may be clarified or otherwise disposed of, either by telephone discussion or by a personal interview, the Examiner is invited to contact the undersigned representative at the number indicated below.

To the extent necessary, applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage in the fees due in connection with the filing of this paper, to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Dep. Acct. No. 01-2135 (520.43783X00), and please credit any excess fees to such deposit account.

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS, LLP

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